CUSTOM BUILD & URBAN DESIGN COHERENCE

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Custom Build and Urban Design Coherence
A report written by the University of Portsmouth and Radian Group

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Executive Summary

The aim of this report is to investigate the relationship between key custom build housing models and their impact on place making and urban design coherence. Custom build refers to hybrid models whereby individuals or groups work with a specialist developer to help deliver their homes,[1] along the spectrum between self-build and traditional development. Further definition of the types of custom build along the continuum from traditional development to self-build can help to articulate the potential benefits and pitfalls of the different models.

There is the capacity and demand to increase custom build in the UK. For this to happen at scale would require government intervention (as happens in Europe). Consortia of private developers, local governments and end users need to be provided with encouragement and incentives to innovate in the production of custom build neighbourhoods.

Custom build housing starts creating communities by forming relationships during the actual process of placemaking.[2] Strong involvement of future residents from the onset and throughout all phases of the development in the co-design of their homes and communal spaces is a key factor in enhancing the levels of satisfaction, sense of belonging, community and identity.

The collective coordination of future residents' wants and needs with well-defined urban design codes or house-building guidelines helps generate public spaces that are diverse yet cohesive. The co-creation process allows for meaning and sense of belonging to be established even before the very physical realisation of these places.

Limiting the co-design process to customised modifications of dwellings alone may fail to attain neighbourhoods in which communities develop a long-lasting sense of ownership. Conversely, custom build projects set in the context of a clear masterplan tend to result not only in a good provision of dwellings but also in a successful public realm (and public spaces) for local communities and the city at large.

The co-design process needs to be effectively led and managed in order for it to provide a structured framework and attain more than the sum of its parts. There is evidence to suggest that having too much individual choice may result in confusion rather than satisfaction, leading to a more time consuming and stressful process for the client.[3] Clear goals, timelines, expectations and limitations need to be agreed early on.

Custom build tends to add value to a housing development in all three domains of sustainability: social, economic and environmental. There are tangible and intangible benefits of custom build. The overall value produced in a custom build home is often significantly higher than an equivalent market value home.[4] However, there may also be other less measureable sets of values associated with custom build, such as social status and a sense of belonging or pride, that are difficult to quantify.[5]

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[1] Department of Communities and Local Government. *Right to Build: Supporting Custom and Self Build – consultation*. London: DCLG (2014).
[2] Morton, A. *A Right to Build: Local homes for local people*. London: Policy Exchange (2013), p.33-34.
[3] Schoenwitz, M. *The nature of choice in mass customized house building*. Construction Management and Economics (2012). Vol. 30 (3), p. 206.
[4] Parvin, A. Saxby, D. Cerulli,C & Schneider, T. *A Right to Build: The next mass house building industry* (2011a). p.33.
[5] Ibid., p.23.

Contents

Introduction

The aim of this report is to investigate the relationship between key custom build housing models and their impact on place making and urban design coherence. The term custom build was coined by the UK Government in 2011 and refers to hybrid models whereby individuals or groups work with a specialist developer to help deliver their homes,[6] along the scale between self-build and traditional development. This can happen through different phases of the development and with varying degrees of intensity. Research on custom build is an emerging field and has concentrated on its potential to complement the construction industry's efforts to meet the demand for dwellings whilst achieving homes that represent better value for money and meet the needs and aspirations of their owners/ occupants. However, it is first necessary to consider the relationship between different models of custom build in relation to levels of control/ freedom of the end-user to customise their living environment, and the impact of the custom built dwelling on the public realm. In this regard, this report explores custom build in relation to place making and urban design coherence under three key research questions. It investigates to what extent different custom build models address the promotion of formal diversity and cohesiveness; how to foster custom build developments that are not just a collection of adhoc building projects showing no regard for each other or for the quality of the spaces created by the collective whole; and the economic implications associated with custom build projects to all stakeholders.

The research is a collaboration between the University of Portsmouth School of Architecture and Radian Group.[7] The project was partly funded by the Higher Education Innovation Fund (HEIF) and partly by Radian Group. Although Radian is the main beneficiary of this report, other housing providers will benefit from a more in-depth understanding of how custom build models can be integrated into their plans for future business development. Other beneficiaries include policy makers and potential clients interested in creating their own custom built home.

National research has highlighted that previous governmental housing policies attempted to meet the UK housing demand through a top-down approach. Unfortunately this failed to provide the quantity or quality of housing required and as a result perhaps a new approach is necessary.[8] It has been argued that we are on the verge of a new period where, instead of radical activism or one-directional resolve from government or experts, 'grass roots meets top down'.[9] In this regard, custom build has been promoted as a mediatory framework in the delivery of homes in the UK. However, when compared to the rest of the world, the UK produces far fewer custom-built homes.[10] There is strong evidence to suggest that there is the capacity and demand to increase the number of custom-built housing projects in the UK.[11] A recent national survey found that over 50% of respondents reported they would be interested in developing a custom built home. Yet, currently custom build accounts for less than 10%

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[6] Department of Communities and Local Government. *Right to Build: Supporting Custom and Self Build – consultation*. London: DCLG (2014).

[7] Radian is a key regional housing provider, employing over 1,300 staff and providing over 21,000 affordable homes in Berkshire, Buckinghamshire, Dorset, Hampshire, Surrey, Sussex, and Wiltshire. The majority of its activity is general needs housing, but the company also has a significant portfolio of sheltered and supported housing, together with key worker accommodation, shared ownership, market rent and private sale properties. http://www.radian.co.uk/.

[8] Department for Communities and Local Government. *Laying the Foundations: A Housing Strategy for England*. London: DCLG (2011). p.1-2.

[9] Thraves, L. *A Dose of Localism, The Role of councils in Local Health*. London: LGIU (2012).

[10] National Self Build Association. *An action plan to promote the growth of self build housing*. London: NaSBA (2011). p.6.

[11] Ibid., p.2.

of overall new housing supply.[12] The recent surge of interest in custom build housing, including the reference to it in the recent Housing and Planning Bill (2015), is evidence that attitudes and practices within the government's emerging housing policy framework and within the housing industry in the UK are changing. It is thought that this divergence potentially represents a radical departure from conventional land use, which could signify a paradigm shift in the way we choose to build our homes.[13]

This report is divided into five main parts. Section one introduces the methodology; explaining the process implemented to find, select and review the literature and case studies. This is followed by a section on context and background to the topic. Section three examines the main research questions using a case study approach. Initially, this section focuses on the relationships between formal diversity and cohesiveness in different custom build models. Secondly, it analyses how these variables affect place making at the neighbourhood scale. Section four, considers key financial implications of custom build projects to the main stakeholders. Finally, the conclusions synthesise the findings and highlight areas for further investigation.

1. Methodology

The approach for collecting data for this report included a literature search and review, case study analyses and field visits. Regarding the first, the following databases were used: Discovery, Science Direct, Scopus and Web of Science to gather academic publications on the subject. Governmental reports, industry reports and specialised websites were found through searches on Google. The primary search terms used were: "Custom build" and "Self-build" with the additional search terms "Architecture", "Design", "End user", "Innovation", "Housing", "Houses". This resulted in 81 entries. Research record cards were completed for selected publications identifying key information regarding the project's main research questions. Steering group meetings took place regularly to evaluate the information and to guide the development of the work.

Concomitantly, a search for and analyses of case studies was undertaken. This was identified through the literature and Internet searches. A case study approach was used in order to investigate the implication of the different models of custom build upon place making and urban design coherence. The cases selected were chosen to explore the diverse range of models, allowing for the construction of a discourse that connected theory and the physical experience. In order to further gather information, a study trip to Freiburg was undertaken by two members of the project team. Site visits were conducted in Vauban and Rieselfeld, two of the most significant sustainable neighbourhoods in Europe to engage the end users in the customisation of their living environments from an early stage.

2. Context

Due to the increase in custom build projects around the world there has been a growth of literature published on this subject in the past 10 years. As the texts reviewed were all written for varying purposes and are directed to different audiences this resulted in some disparity and inconsistent use of relevant terms. There is however a general consensus that custom build sits under the broader term of

[12] Department of Communities and Local Government. *Laying the Foundations: a Housing Strategy for England*. London: DCLG (2011).
[13] Lloyd, M. G., Peel, D. and & Janssen-Jansen, L. B. *Self-build in the UK and Netherlands: mainstreaming self-development to address housing shortages?* Urban, Planning and Transport Research: An Open Access Journal (2014). Vol. 3 (10), p.22.

self-build, which covers all instances where the end user participates in the production of their home.[14] For the purpose of this report custom build is defined as a practice where individuals work with a specialist developer to help deliver their homes.[15]

This approach is rooted in the activist and politically energised practices of the 1970s that came about with the advent of participation as an architectural movement,[16] in which the right to be an active stakeholder in decision making processes, normally delegated to experts, was extended to users. In turn, this movement was a form of a reaction to top-down approaches to urban development, which excluded urban dwellers from the process of designing and providing vital spaces, services and the public realm generally. Participation has since then generated a fertile stream of research, practice-based research and action research, with Segal, Papanek and Turner being only a few amongst the many scholars, architects and activists promoting the role for design as a discipline with its roots in social engagement and looking at informal self-build settlements and their part in urban development.

Today, a number of governmental papers and professional organisations' reports[17] have explored custom build as a way to both complement the construction industry's efforts to meet demand for dwellings and as a way to tailor the end product to the users' needs and expectations. In *Around the world: Volume house-building is not normal*, it is argued that the UK is dependant upon volume house builders due to factors such as industry culture, lack of diversity in procurement and financial models. The authors claim that this is unusual in a global context, as popular culture and industry 'know-how' of custom build is much better understood and accepted as normal in comparable countries.[18] Similarly, in the report *A Right to Build: the next mass house building industry* the authors highlight that that the UK housing crisis is both long-term and wide-reaching and this has as much to do with who we allow to build our homes as how we build them.[19] The report goes on to state that the UK is dependant on a small number of large speculative developers, which are failing to meet housing demand. These assertions are mirrored in *Who should build our homes*.[20] In this report, the 2008 UK financial crisis is seen as a crucial turning point that further exposed the underlying issues associated with having a housing market largely reliant on speculative developers. This model of housing production, being dependent on a strong economy, led to a dramatic decrease in house building due to

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[14] Barlow, J. Jackson, R. & Meikle, J. *Homes to DIY for the UK's self-build housing market in the twenty-first century*. York: Joseph Rowntree Foundation (2001). p.1.

[15] Department of Communities and Local Government. *Right to Build: Supporting Custom and Self Build – consultation*. London: DCLG (2014).

[16] Brown, R. *Designing Differently: the Self-Build Home*. Journal of Design History (2008). Vol. 21(4), p.359-370.

[17] Department of Communities and Local Government. *Laying the Foundations: a Housing Strategy for England*. London: DCLG (2011).; Department of Communities and Local Government. *Right to Build: Supporting Custom and Self Build – consultation*. London: DCLG (2014).; Barlow, J. Jackson, R. & Meikle, J. *Homes to DIY for the UK's self-build housing market in the twenty-first century*. York: Joseph Rowntree Foundation (2001).; Build Store. *Self Build Moving Centre Stage: Expanding the market for self procured housing*. Swindon: Buildstore (2009).; Building Societies Association. *Lending information for self build*. London: BSA (2012).; Collective Custom Build. *Around the World: Volume House-Building is not normal*. Sheffield: University of Sheffield (2012).; Commission for Architecture and the Build Environment. *Who should build our homes? Six experts challenge the status quo*. London: CABE (2009).; Parvin, A. Saxby, D. Cerulli,C & Schneider, T. *A Right to Build: The next mass house building industry*. London: Policy Exchange (2011).; Schoenwitz, M. *The nature of choice in mass customized house building*. Construction Management and Economics (2012). Vol. 30 (3), 206.

[18] Collective Custom Build. *Around the World: Volume House-Building is not normal*. Sheffield: University of Sheffield (2012).

[19] Parvin, A. Saxby, D. Cerulli,C & Schneider, T. *A Right to Build: The next mass house building industry*. London: Policy Exchange (2011).

[20] Commission for Architecture and the Build Environment. *Who should build our homes? Six experts challenge the status quo*. London: CABE (2009).

the financial crisis. The authors argued that even during a boom this model of housing has been unsuccessful in providing the quality or quantity of housing required.[21]

The shortcomings of the speculative developer model – arguably based on a build to sell basis, rather than a build to live, prioritising short-term asset-value over long-term use-value –[22] have led to the search for alternatives that can both meet demand and foster sustainable and resilient neighbourhoods. In *Laying the foundations: A housing strategy for England*[23] the UK government admits to the inadequacies of creating a housing market that is reliant on speculative developers and propose that a new approach is needed. Custom build is identified as a possible solution. As a result custom build has been incorporated as a strategy for increasing housing supply, whilst addressing the socio-economic benefits of creating a more responsive housing market.

Further uptake of custom build in the UK will depend on many factors. The literature tends to suggest that a more flexible planning framework, a clear and easily accessible funding structure and increased public information about the custom build route are needed. With regard to planning, following the analysis of international case studies the report *Who should build our homes*[24] proposes that local authorities should be given greater autonomy to create new communities of high standards. In order for this to be successful, it would be necessary to provide local authorities with a framework in which they can work with developers, as finance is a key issue for all stakeholders. Custom build challenges the norms in housing and is therefore seen as inherently more risky, therefore clarity on the benefits and potential economic pitfalls of custom build must be better disseminated to the wider public, as well as the consolidation of specific funding streams to support both developers and clients.[25] A shift in paradigm can only happen if a certain critical mass opting for custom build is achieved. At the same time, one of the obstacles preventing the widespread development of custom build in the UK is that the current custom build market is fragmented and lacks profile, making it difficult to navigate as a novice.[26]

Although the recent surge of interest in custom build sits in a wave of thinking (i.e 'co-design' and 'co-creation', as opposed to mere 'consultation') that has the potential to resolve the dichotomy between top-down governmental resolve and bottom-up activist engagement. An area which is not sufficiently considered in the literature is the need to focus on the establishment of frameworks for the coordination of individual choices, collective aims and the resultant built environment.[27] This raises questions about the degree of freedom of choice for custom build projects and the repercussion of such choices on the identity of the place, its relationship with the wider image of the city as well as the mechanics of participation that may effectively integrate such factors within the planning process.

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[21] Ibid., p.32.
[22] Collective Custom Build. *Motivating the Collective Custom Build*. Sheffield: University of Sheffield (2012).
[23] Department for Communities and Local Government. *Laying the Foundations: A Housing Strategy for England*. London: DCLG (2011).
[24] Commission for Architecture and the Build Environment. *Who should build our homes? Six experts challenge the status quo*. London: CABE (2009).
[25] National Custom & Self Build Association. *An action plan to promote the growth of self build housing*. London: NaCSBA (2011). p.5.
[26] Ibid., p.5.
[27] Lloyd, M. G., Peel, D. and & Janssen-Jansen, L. B. *Self-build in the UK and Netherlands: mainstreaming self-development to address housing shortages?* Urban, Planning and Transport Research (2014). Vol. 3(1), p.27.

3. Custom build and Urban design

3.1. Diversity and Cohesiveness

The element that differentiates custom build from other models of housing is the unique partnership between developer and end user. While both parties go into the project with different needs and aspirations, one design aspect that is of significance to both is the equation between the level of formal diversity and spatial cohesiveness within the scheme as a whole. Developers may control the spatial cohesiveness of the scheme by creating an overall masterplan before allowing the client to enter the process. In this model, operated by many custom build companies in the UK, a blueprint is generated including the general infrastructure, the communal areas and serviced plots. At this point clients would enter the process and become partners in developing the formal character of the development. The levels of impact on the overarching collective image of the future community will vary, from minor features – as for instance in the selection of interior fittings – to highly impacting, by designing their bespoke homes with little or no constraints. Although clients may be drawn to custom build schemes because of certain levels of freedom of choice offered, the impact of individual and collective choices on the quality of places should not be underestimated. To address this issue, developers and local authorities tend to opt for the utilisation of urban design codes – a set of guidelines defining what is allowable in the individual construction – and the use a of kit of parts, a catalogue of modular components from which the client can choose. There is, however, a gradation of approaches that are possible within this continuum affecting the external appearance within the development.

The challenge of balancing customisation against standardisation is one that has been raised as an issue. It is generally accepted that the level of end user participation is largely dependant on the point at which they enter the process.[28] However, creating a home is complex and therefore has a number of stages at which customisation could occur.

Within the UK there are various models of housing available, although it is widely acknowledged that the majority of the UK housing stock is produced through speculative developments. This model follows a set blueprint comprised of pre-defined options that offer the end users little to no choice in the design of their property, with the principal aim being to achieve an efficient build process to generate maximum profit. The resultant homes are very similar in design, using the same materials and features. This level of control by developers offers assurance to end-users as they can visit example properties and feel confident that they know exactly what they are purchasing. At the other end of the spectrum sits self-build which offers infinite choices with regards to design and location with a variable range of prices to suit. There is however some evidence to suggest that having too much choice can result in confusion rather than satisfaction, leading to a more time consuming and stressful process for the client.[29]

[28] Schoenwitz, M. *The nature of choice in mass customized house building*. Construction Management and Economics (2012). Vol. 30 (3), p.206.
[29] Ibid.

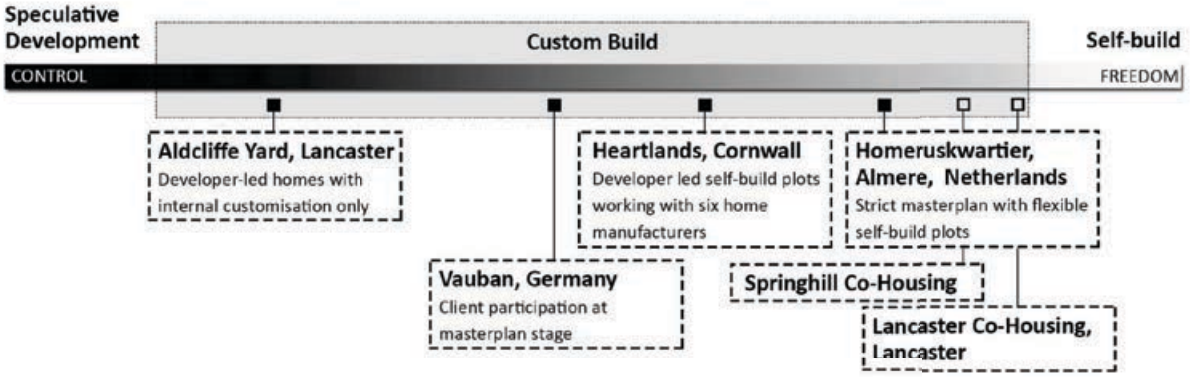

Fig.1 – House building continuum

Custom build housing models combine a variety of elements from the strictly controlled speculative developments to the completely free self-builds. Examples of these models have been placed on the illustrative continuum (Fig.1). The rationale for placing the case studies in this order has come out of research that indicates the point at which the clients entered the process. Factors considered include the amount of options available to the end user and their involvement in the design of both the internal and external appearance of their new home.

Fig. 2. Aldcliffe Yard, Lancaster

Aldcliffe Yard in Lancaster is a custom build model closer to the speculative developer end of the spectrum. The development is a collaboration between private developer Bloc and the charity Canal & River Trust. Being in a conservation area there were limitations on the external appearance of the

new properties, allowing clients only the option to alter the internal layout of their homes.[30] The developer provided clients with an interactive customisation website, which allowed the movement of walls and the ability to preview a 3D walk-through.[31] The ease with which clients could customise was popular and resulted in schemes that respectfully blended in with the cultural heritage of the site whilst still providing homeowners the ability to customise their own living spaces.

Fig. 3. Vauban Custom Built homes

[30] The Self Build Portal, *Aldcliffe Yard, Lancaster* (2015). http://www.selfbuildportal.org.uk/aldcliffeyard
[31] Plot. Build your dream home. *Aldcliffe Road, Lancaster* (2015). http://www.dreamplot.net/plot/lancaster-custom-build

Fig. 4. Street in Vauban

Moving along the continuum, Vauban is a new city district in Freiburg, Germany. The development is government led and focuses on participation and co-operation, resulting in strong public engagement throughout all phases of the development. Residential plots were sold to either co-operative housing groups or individual self-builders. The development adopted a 'learning while planning' process which allowed extra flexibility during the design of new homes.[32] Although there is a wide variety of architectural forms, the infrastructure and landscaping create a strong sense of cohesion throughout the development. Architects and developers worked within the guidelines of the "Leitfaden Bauen in Vauban" (A Guideline for Builders in Vauban) which outlined maximum building heights in order to create high quality street spaces. The width of residential streets was set at 19 meters. Materials, colours and roof pitches were not specified.

[32] Quartier Vauban (2013). http://www.freiburg.de/pb/site/Freiburg/get/647919/Infotafeln_Vauban_en.pdf

Fig. 6. Heartlands, Cornwall

Heartlands, in Cornwall, is a developer led custom build project set to start on site in 2015. Primary developer Carillion Igloo assigned six home manufacturers to work with clients to design and eventually build 54 bespoke homes within a controlled masterplan. The masterplan set out design codes and the level of involvement by end users was optional depending on skills, timescales and budget.[33] All six home manufacturers had to ensure that each design worked within the agreed design codes, as well as enhancing the overall vision for the new neighbourhood. As the project has not yet been completed the end result and the balance of diversity versus cohesiveness is unknown. It is however the first of its kind in the UK and involved collaboration between the Home and Communities Agency, the local council and of course future residents.[34]

[33] Waite, R. *Carillion Igloo unveils designs for pioneering custom-build scheme*. Architects Journal Online (2014). http://www.architectsjournal.co.uk/news/carillion-igloo-unveils-designs-for-pioneering-custom-build-scheme.

[34] Homes and Communities Agency. *Plans approved for Cornwall's custom build housing project* (2015). https://www.gov.uk/government/news/plans-approved-for-cornwalls-custom-build-housing-project.

Fig.5. Homeruskwartier, Almere Diversity and Cohesiveness

Homeruskwartier, in Almere, is an innovative government led development in the Netherlands with the ambition of creating a new town to include more than 3400 new homes, 1000 of which are zoned to be custom build.[35] It offers self-build serviced plots within a strict masterplan and zoning framework. Upon purchasing their plot clients are given an A4 sized 'passport' which outlines key restrictions. These usually include maximum height, gaps required between homes and the buildings' boundaries. Beyond these rules owners are free to design and build their homes however they like.[36] The result is genuine diversity; residents have almost complete freedom to express their personal choices in terms of built form. The development has attracted clients ranging from 19 to over 70 as well as a variety of ethnic backgrounds.[37] As it is still a work in progress, the final outcome is yet to be fully realised. The adhoc and unique nature of each property raises the question of re-sellability and the long-term issue of development resilience.

Although all different in their approaches, the models chosen highlight that the key to delivering a successful model of custom build housing requires the right balance between providing options to the end user whilst also generating profits. This seems to be controlled in all instances with a masterplan and design codes. The management of the customisation process needs to be built into the overarching timescale and planning of the development, supporting both future residents and developers to resolve conflict.

There are no custom build case studies in the UK comparable to the size of Almere and Vauban, one of the identifying factors is that they are both government led. A shift towards positive planning in the UK, as suggested by the Farrell Review of the Built Environment, advocating a less restrictive planning process could, among other things, turn the tide allowing for more innovative modes of housing development in this country. The two smaller UK based projects were developer led and

[35] Lloyd, M. G., Peel, D. and & Janssen-Jansen, L. B. (2015) *Self-build in the UK and Netherlands: mainstreaming self-development to address housing shortages?* Urban, Planning and Transport Research (2014). Vol. 3 (10), p.22.
[36] The Self Build Portal. *Almere, Holland* (2015). http://www.selfbuildportal.org.uk/homeruskwartier-district-almere.
[37] Hopkirk, E. *The Netherlands's Almere leads the way on self-build communities*. Building Design Online (2011). http://www.bdonline.co.uk/the-netherlands-almere-leads-the-way-on-self-build-communities/5019196.article.

tended to have more controls in place. One explanation for this could be that the custom build housing sector is still in its infancy when compared to Europe.

3.2 Placemaking

Placemaking has a long tradition in urban design theory and this is one of the central preoccupations of the Farrell Review of Architecture and the Built Environment. Yet, just recently it has been associated more directly with custom build.[38] Assuming that place making is 'the collaborative process by which we can shape our public realm in order to maximize shared value',[39] the importance of the co-creation process of custom build housing cannot be minimised. In his seminal text Norberg-Schulz elucidates that place is multidimensional, being at the same time concrete and localised, but also immaterial and dependant on perceptions.[40] Therefore, the physical domain, and its associated aesthetic characteristics, presents only one element of the place that has been created. Individual perceptions and social interactions generated are equally important.

Creating strong communities has been a key objective in UK housing policy for a long time.[41] In traditional development, developers tend to focus on controlling costs and profitability often at the expense of design quality. In addition, a crucial structural weakness of the speculative housing model points to the fact that the end users are not involved in the process, one of the consequences being that social relationships with neighbours do not start until the spatial structure of the community has been built. Custom build neighbourhoods, on the other hand, offer a contrasting alternative. Through the formation of end-user-centric processes, clients inherently feel valued and more invested in the end product. In fact, rather than expecting the spatial structure to be the starting point of the formation of strong communities, the process of participation in co-designing starts creating communities by forming relationships during the actual process of making place.[42] Despite the fact that undertaking a self-build project can be both complex and time-consuming, especially when doing so as a group,[43] the long-term benefits tend to outweigh difficulties during the process.[44] Those living in custom build projects move on average only once every 25 years, compared to the national average of once every 6 years.[45] Custom build tends to lead to more socially sustainable and resilient communities.

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[38] Collective Custom Build. *Motivating the Collective Custom Build*. Sheffield: University of Sheffield (2012).; Zhou, J. *Urban Vitality in Dutch and Chinese New Towns*. Beijing: DU Delft University (2012).; National Custom & Self Build Association. *An action plan to promote the growth of self build housing*. London: NaCSBA (2011).; National Custom & Self Build Association. *Lessons from international self build housing practices*. London:NaCSBA (2011).; Commission for Architecture and the Build Environment. *Who should build our homes? Six experts challenge the status quo*. London: CABE (2009). Mokhtarshahi, S.R., Bahar, U. & Pinar, U. *The significance of user participation in architectural design: the case of Nicosia social housing complex*. ArchNet-IJAR (2011). Vol. 5 (3), p.25-39.; Broer, S. Titheridge, H. *Eco-Self-Build Housing Communities: Are they Feasible and Can They Lead to Sustainable and Low Carbon Lifestyles?* Sustainability and Consumption (2010). Vol. 2 (7). p. 2084-2116.

[39] Project for public spaces. *What is placemaking?* (2015). http://www.pps.org/reference/what_is_placemaking/.

[40] Norberg-Schulz, C. The Phenomenon of Place. In: Larice, M & McDonald, E. *The Urban Reader*, London: Routledge (2007). p.125-37.

[41] Parvin, A. Saxby, D. Cerulli,C & Schneider, T. *A Right to Build: The next mass house building industry*. London: Policy Exchange (2011). p.33.

[42] Morton, A. *A Right to Build: Local homes for local people*. London: Policy Exchange (2013). p.33-34.

[43] National Custom & Self Build Association. *An action plan to promote the growth of self build housing*. London: NaCSBA (2011).

[44] Lloyd, M. G., Peel, D. and & Janssen-Jansen, L. B. *Self-build in the UK and Netherlands: mainstreaming self-development to address housing shortages?* Urban, Planning and Transport Research (2014). Vol. 3 (10). p.19-31.

[45] Stevens, T. *How they do large scale self build in the Netherlands*. In: Ash, C, Birkbeck, D, Brown, S. Cerulli, C. & Stevenson, F. *Motivating Collective Custom Build Report*. Sheffield: University of Sheffield (2013). p.46.

These ideas are mirrored in *The Social Impact of Housing Providers*. This report highlights that priorities are changing from decisions favouring short-term financial gains, to investments that benefit society and encourage stewardship. The report goes on to state that housing models that encourage community engagement, control over goods, services and outcomes, are commonly related to increased wellbeing, life-satisfaction and happiness.[46]

The latest custom build projects in the UK and internationally all offer varying levels of user participation with regards to place making, six have been analysed on the user participation continuum and four have been discussed (Fig.7). Deciding factors for placing the case studies on the continuum resulted from careful comparative analysis of the differing approaches taken in making place. This report prioritises the types and levels, eg the point of entry and the proportion of residents involved over the vastly different scales of the developments. The level of user participation and freedom offered affect the final place that is created, in the quality of the built environment and the quality of place as acknowledged by the community.

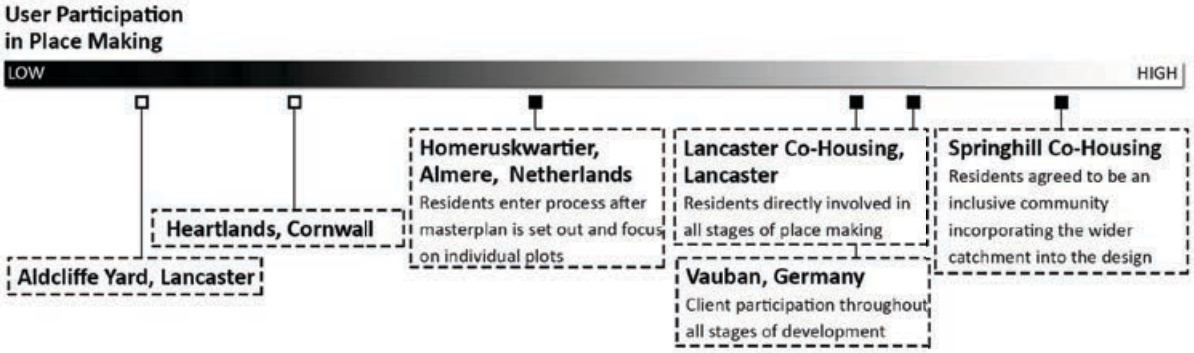

Fig. 7 – User Participation in Place Making Continuum

[46] Fujiwara, D. *The Social Impact of Housing Providers*. London: HACT (2013).

Fig. 8 – Homeruskwartier, Almere.

Residents choosing to live in Almere are given three starting options; privately commissioning their home on a self-build plot, assembling a group and designing a multi-dwelling unit, or joining an existing developer-led project. All plots sit within a strictly controlled masterplan with design restrictions varying depending on the area in which clients choose to build. The infrastructure and space zoning was finalised before residents entered into the process, resulting in the clients only being able to influence what happens on their specific plot. This level of individualism has resulted in streets lined with distinctly different houses. However, due to the given rules for the development of plots, a good balance has been achieved between formal diversity and cohesiveness, leading to external spaces that tend to present formal variety and visual interest. However, the development of such towns can take a considerably longer period of time to be completed resulting in an initial lack of urban vitality.[47]

[47] Zhou, J. *Urban Vitality in Dutch and Chinese New Towns*. Beijing: DU Delft University (2012). p.3.

Fig.9 – Vauban, Freiburg Street Scene

The level of participation seen in Vauban progressed throughout all the phases of the development, which allowed future residents to identify with their district long before they were built. The commitment of the community to create a sustainable and flourishing neighbourhood was realised through workshops and meetings. The process of timely co-defining aims, and strategies to meet those, had direct repercussions on the kinds and quality of communal places in Vauban. The resultant masterplan focussed on reducing the reliance on cars, by providing strong public transportation links, and on the definition of a network of open spaces for people. As a consequence of this decision, streets, courtyards and green spaces were designed as places for social interaction. Throughout Vauban, the streets present a clear visual variety given by the building form, choice of materials and use of landscape features; but a sense of unity prevails, as sizes of building frontages, heights of buildings and rhythm of openings tend to be controlled. The coherent landscape counteracts potential excessive disparity in built form. The main green spaces offer moments of social interaction between areas in Vauban and the city – the backdrop of buildings contributing to their sense of enclosure. Long after completion there is still a large number of residents involved in local initiatives further strengthening the community.[48]

[48] Vauban Housing Website (2015). http://www.vauban.de/en/topics/history.

Fig.10 – Lancaster Co-housing

The process of place making in Lancaster co-housing was divided into four stages, which were driven by user participation. During the first stage the future residents worked with an architect to develop a masterplan for the whole site creating a strategy based on their shared values of sustainable living. The clients then discussed their individual needs for space requirements and ideal internal layouts within their new zero carbon homes.[49] The third stage brought discussions back to the core values of shared facilities and the residents designed the communal house. As the residents worked together to realise the final design, the result is one that is visually cohesive with regards to materials, landscaping and built form. Elements of diversity are subtle but nevertheless offered the clients the opportunity to customise their property dependant on their needs. The way in which the design utilises the site encourages social interaction. Although allowing a high level of choice to end users resulted in an eight year long project in which the architects' plans went through over twenty revisions, it did create a framework for the emergence of a strong community to which all residents had the opportunity to contribute. Chatterton, one of the residents of Lancaster co-housing, stated that the 'process was as important as the final product'.[50]

[49] The Self Build Portal website (2015) Lancaster Co-housing. http://www.selfbuildportal.org.uk/lancaster-co-housing-project.

[50] Chatterton, P. *Low Impact Living: A Field Guide to Ecological, Affordable Community Building*, Oxford: Routledge (2015). p.87.

Fig.11 – Springhill Co-housing

Springhill co-housing in Stroud was the first of its kind in the UK and saw a group of clients working together to create the ideal place in which they wanted to live. During the masterplanning stage, priority was taken away from the car by creating a pedestrian main street that runs through the development. In addition the residents admirably considered the design an of open scheme that encompassed the wider community, therefore creating a place that sits comfortably within its setting. As many clients contributed to the design process, the outcome was controlled through the use of a limited materials palette as well as setting out the predominant building form and layouts. The result is that of a visually cohesive scheme with interesting elements of diversity where residents have expressed their choices. The effect of creating a strong pedestrian route has created what residents describe as a village character.[51]

Strong involvement of future residents in the co-design of their homes and communal spaces is a key factor in enhancing the levels of satisfaction, sense of belonging, community and identity. The examples above showed that although there was potential for the physical quality of place to be negatively affected by the possibility of wide individual choices; collective coordination of future residents' wants and needs and/or well-defined urban design codes or house-building guidelines helped generate public spaces that were diverse yet cohesive. The co-creation processes allowed for meaning and sense of belonging to be established even before the very physical realisation of these places.

Limiting the co-design process to customised modifications of dwellings may fail to attain neighbourhoods in which communities develop a long-lasting sense of ownership. Conversely, custom build projects in which the masterplan is co-designed tend to result not only in a good

[51] Springhill Cohousing website (2014). http://www.therightplace.net/coco/public/.

provision of dwellings but also in a successful public realm (and public spaces) for local communities and the city at large.

4. Economic Implications

The recent increase in custom build projects has been driven by innovative companies that are tapping into a market of buyers who might not have considered existing housing stock or speculative developer homes. Although it is estimated that custom build will see significant growth over the next 5 years,[52] a key challenge is to substantially increase its appeal to a wider range of end users. In doing so, custom build can help offer some much needed stability to the UK housing supply system.[53]

Securing finance is difficult for one-off self build projects as banks require security and will only provide a mortgage if they are certain about the property value, which is difficult to predict.[54] In the long term it seems unlikely that this model of housing will be able to provide the quantity of homes required. Conversely, custom build projects are able to reduce the risk to lenders by combing the self-build model with speculative developer frameworks. The market also favours single financial intermediate groups to channel funds[55] and as a result custom build developers have the potential to deliver more affordable market and shared equity homes.

Whether custom build is intrinsically more or less expensive than other models is open to debate. Reported benefits include the fact that clients are more in control of design decisions, therefore having more control over projected expenditure. In addition, clients generally save money with land costing less than £125K (as it has no stamp duty) and no VAT on new build homes. Clients can also save money due to the fact that developers may take less profit due to the reduced financial risk of borrowing money for construction.[56] Unrealistic expectations leading to an overly costly end product, lack of control in the decision-making process, untimely changes of mind and excessive time spent in meetings and making choices can lead, on the other hand, to increased financial burden. As a business model, custom build offers developers the opportunity to sell sites at varying levels of completion, freeing up cash and reducing the need for borrowing to complete the entire build. However, coordinating the complexities of the co-design process and the multiple choice stages, including resolving emerging conflicts can increase cost if not budgeted in advance.

It could be argued that there are tangible and intangible benefits, which are difficult to quantify. This can be demonstrated by the fact that the overall value produced in a custom build home is significantly higher than an equivalent market value home.[57] However, in a consumer-centric process the word 'value' is expanded to include more than simply financial asset gains. Allowing user participation in the design process tends to drive renewable technologies and create better performing buildings, thereby reducing their long-term running costs. Other less measureable sets of values which are nonetheless universally acknowledged include social status, a sense of belonging or pride.[58]

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[52] Gardiner, J. *Custom Build: Give us the tools*. Building Design (28.2.2014). Supplement, p.10-12.
[53] Build Store. *Self Build Moving Centre Stage: Expanding the market for self procured housing*. Swindon: Build Store (2009). p.23.
[54] Lloyd, M. G., Peel, D. and & Janssen-Jansen, L. B. (2015) *Self-build in the UK and Netherlands: mainstreaming self-development to address housing shortages?* Urban, Planning and Transport Research (2014). Vol. 3 (10), p.19-31.
[55] National Custom & Self Build Association. *An action plan to promote the growth of self build housing*. London: NaCSBA (2011).
[56] Gardiner, J. *Custom Build: Give us the tools*. Building Design (28.2.2014). Supplement, p.10-12.
[57] Parvin, A. Saxby, D. Cerulli,C & Schneider, T. *A Right to Build: The next mass house building industry*. London: Policy Exchange (2011). p.33.
[58] Ibid., p.23.

Whilst the benefits associated with building more sustainable homes are widely acknowledged, the National Planning Policy Framework could develop further to consider a more holistic view of the social, economic and environmental benefits of developments. Against which many custom build schemes can be considered as highly sustainable,[59] typically placing value on reduced impact of the development as a whole.[60]

Custom build tends to add value to a housing development in all three domains of sustainability: social, economic and environmental. This report shows that robust co-design processes can enhance the quality of public spaces in custom build projects, making them more fit for purpose, more related to the residents' needs and expectations, and therefore more cared for. Community building can happen from the onset and remain high if the capacity to influence decisions is kept. Reduced maintenance costs could be expected, as well as less vandalism. In cases where local food production or renewable energy production is sited in communal open spaces, less expenditure on these items can also be expected of residents.

5. Conclusions

There is the capacity and demand to increase custom build in the UK. Harnessing this untapped potential can make a significant contribution to the housing supply both in terms of quantity and quality of homes. Raising awareness of the benefits of the different models of custom build, as well as guidance on the processes involved for the clients, developers and the public in general is needed in order to make the leap. Furthermore, the analyses of the case studies indicate that a flexible policy framework allowing for the negotiation of aims, objectives and methodologies among local authorities, developers and the public could be highly successful in generating model sustainable neighbourhoods that incorporate custom build.

Place quality must remain a key preoccupation of government and must be at the core of any new housing development in the UK. As private developers are responsible for the overwhelming majority of new housing, they must be on board in this task. There is strong evidence to suggest that when end users are involved in the process of designing their homes the result is stronger communities and residents who have better well-being.

Although a generic definition of custom build tends to permeate the debates, a less black and white definition that encompasses a wide variety of types of custom build along the continuum from traditional development to self-built can be more helpful in articulating the potential benefits and pitfalls of the different models. The hybrid nature of custom build suggests that each model will have a particular impact on the nature of the public realm and the overall cohesiveness of the proposal. However, there seems to be a correlation between the strength of the end-user engagement, the period in which this happens and the quality of the public realm: the stronger the co-design process and the longer it lasts, the more suitable to residents the communal spaces will be, achieving both high quality of design and resilience. During this process, the definition of key controllable elements such as building heights, choice of materials and some design choices help create a common framework upon which formal variety can happen. As a consequence, diversity and cohesiveness tend to be qualities mutually found in these projects. Furthermore, social relationships tend to flourish earlier and support the construction and functioning of more connected communities.

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[59] Homebuilding & Renovating. *A 10-Point Plan to Boost Self-build*. Birmingham: Homebuilding & Renovating (2013). p.9.

[60] Collective Custom Build. *Motivating the Collective Custom Build*. Sheffield: University of Sheffield (2012). p. 43.

It must be noted, however, that the co-design process needs to be effectively led and managed. There is evidence to suggest that having too much choice may result in confusion rather than satisfaction, leading to a more time consuming and stressful process for the client.[61] Clear goals, timelines, expectations and limitations need to be agreed early on.

The results regarding the economic implications of custom build suggest that social values and long-term benefits must be taken into consideration. Custom build is more likely to result in better quality housing and cohesive communities as user-led cost-benefit evaluation prioritises long term use value over short-term financial value; however stakeholder involvement is likely to be required to sponsor the necessary investment in master-planning and design coding at the outset. It is the case that custom build homes tend to reach much higher values than their 'traditional development' counterparts. However, more research is needed in order to provide accurate measurements of the, thus far, intangible benefits of social sustainability and resilience achieved in highly successful custom build developments.

[61] Schoenwitz, M. *The nature of choice in mass customized house building*. Construction Management and Economics (2012). Vol. 30 (3), p.206.

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Appendix

List of Case studies

Name	Location	Size	Year	Website
Springhill Co-housing	Stroud, UK	34 homes	2002	www.therightplace.net/coco/public
Heartlands	Cornwall, UK	54 homes	2015	www.igloo regeneration.co.uk/do
Aldcliffe yard	Lancaster, UK	8 homes	2014	www.dreamplot.net www.h2ourban.co.uk
Vauban	Freiburg, Germany	2000 homes	1993	www.vauban.de
Homeruskwartier	Almere, Netherlands	3000 homes	1976	www.selfbuildportal.org.uk/homeruskwartier-district-almere
Lancaster Co-housing	Lancaster, UK	41 homes	2011	www.lancastercohousing.org.uk
Tübingen	Südstadt, Germany	2200 homes	1990	webarchive.nationalarchives.gov
Hempstead Green	Peterborough, UK	11 homes	2012	www.urbanselfbuild.com/hempsted.html
Green Street Phase 2	Nottingham, UK	7 homes	2011	www.ourgreenstreet.co.uk
Darwin Road	Tilbury, UK	10 homes	2001	www.hdawards.org/archive/archive/2003/
Bickleigh Eco Village	Devon, UK	91 homes	2014	www.bickleigh-eco-village.com
Sülzer Freunde	Cologne, Germany	16 homes	2011	suelzerfreunde.de
Findhorne Eco Village	Scotland, U	3 homes	2005	www.ecovillagefindhorn.org

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